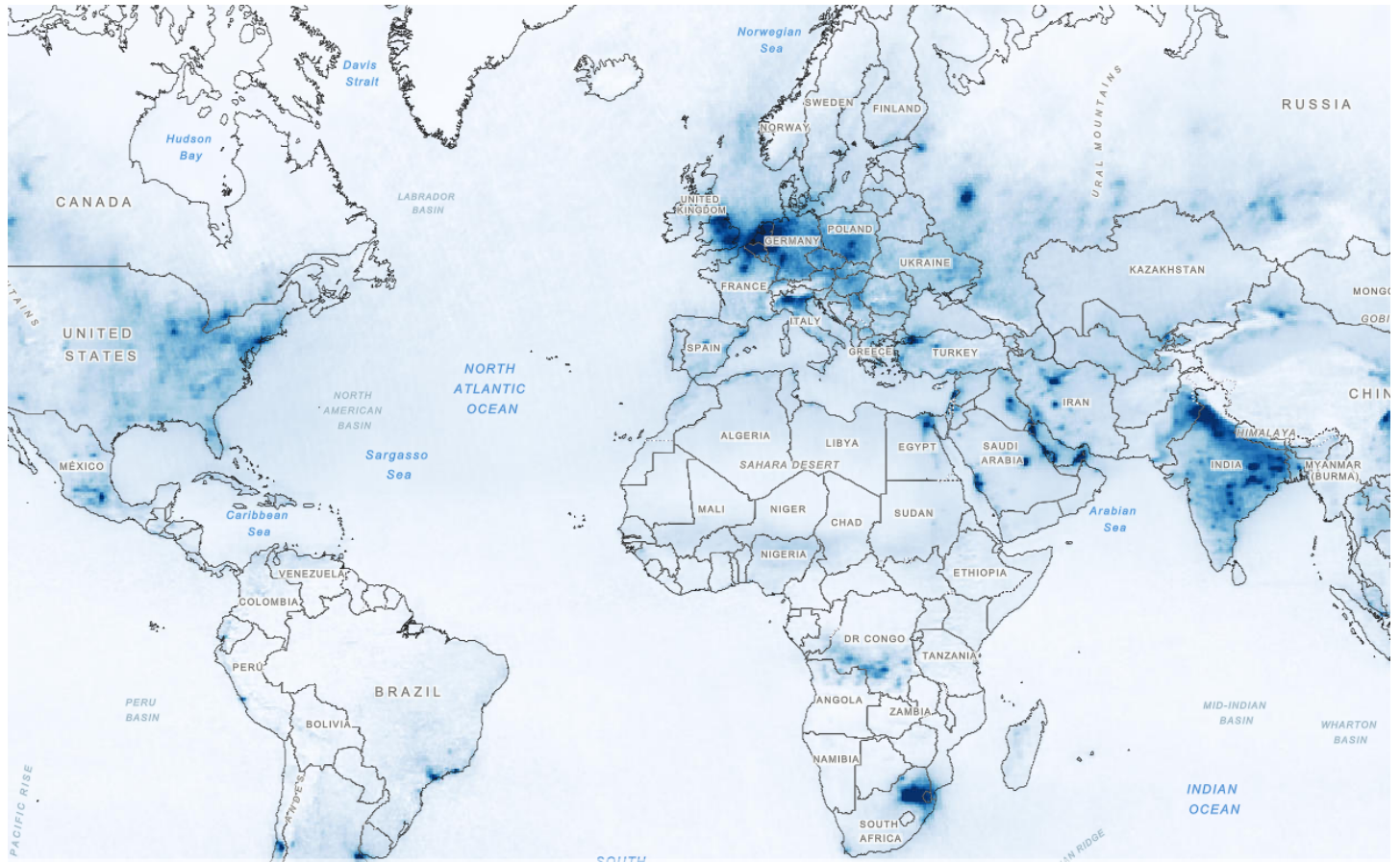


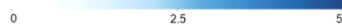
My NASA Data - Interactive Models

Stability and Change of COVID-19 and Nitrogen Dioxide



Global Air Column Concentration of Nitrogen Dioxide

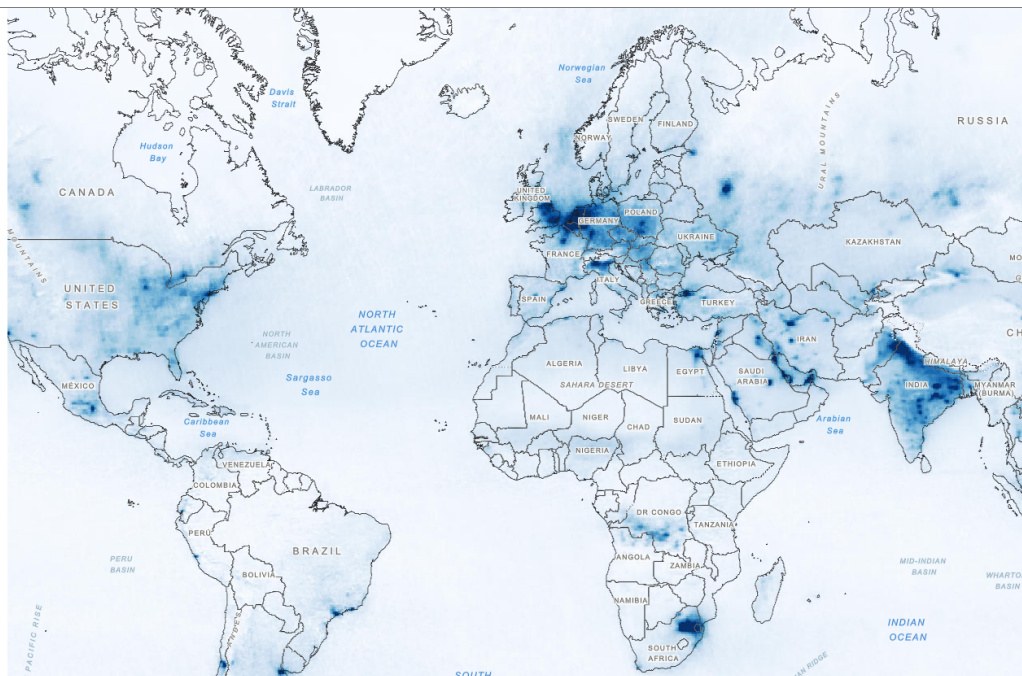
Tropospheric Concentration of Nitrogen Dioxide
(10^{15} molecules per square centimeter)



The map to the right displays the average global air column concentration of nitrogen dioxide during May between the years of 2015 and 2019, before the first outbreaks of COVID-19 in the United States.

Nitrogen dioxide is a pollutant, whose primary sources are from the burning of fossil fuels, automobiles, and factories.

Once in the air, it can aggravate respiratory conditions in humans, especially those with asthma, leading to an increase of symptoms.



CLICK HERE

Learning Objectives

- Students will analyze and describe nitrogen dioxide at different spatial and temporal scales.
- Students will describe the stability of nitrogen dioxide as it relates to changes in human behavior.

Essential Questions

- How does nitrogen dioxide vary across space and time?
- What effect do humans have on nitrogen dioxide concentrations in the atmosphere?
- How is the spread of COVID-19 related to nitrogen dioxide concentrations?

Materials Required

- Computer/Tablet
- Internet Access
- Google Form (optional)
- Link to [Stability and Change of COVID-19 and Nitrogen Dioxide Interactive Model](#)

Teacher Answer Key

Teachers who are interested in receiving the answer key, please complete the [Teacher Key Request and Verification Form](#). We verify that requestors are teachers prior to sending access to the answer keys as we've had many students try to pass as teachers to gain access.

Grade Band

-
- 6-8
 - 9-12

Supported NGSS Performance Expectations

- [MS-ESS3-4: Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.](#)

NGSS Disciplinary Core Ideas

- [ESS2D: Weather and Climate](#)
- [ESS3C: Human Impacts on Earth Systems](#)

Science and Engineering Practices

- [Developing and Using Models](#)
- [Analyzing and Interpreting Data](#)
- [Using Mathematics and Computational Thinking](#)
- [Engaging in Argument from Evidence](#)

Crosscutting Concepts

- [Patterns](#)
- [Systems and System Models](#)
- [Stability and Change](#)

Related Resources

- [Stability and Change of COVID-19 and Nitrogen Dioxide Interactive Model](#)

